DOCUMENT RESUME

ED 405 693 EC 305 403

AUTHOR Rosenfield, Sylvia; And Others
TITLE Research Design, Measurement Methodologies and Procedures Utilized by OSEP-Funded Projects.
INSTITUTION Temple Univ., Philadelphia. Center for Research in Human Development and Education.
SPONS AGENCY Special Education Programs (ED/OSERS), Washington, DC.
PUB DATE Mar 90
NOTE 51p.; In: Designing and Evaluating School Learning Environments for Effective Mainstreaming of Special Education Students: Synthesis, Validation, and Dissemination of Research Methods. Final Report; see EC 305 400.
PUB TYPE Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Disabilities; Elementary Secondary Education; Federal Aid; High Risk Students; Interviews; *Learning Processes; *Mainstreaming; *Performance Factors; Regular and Special Education Relationship; *Research Design; *Research Methodology; Research Needs; Research Projects
IDENTIFIERS Office of Special Education Programs; *Research Cooperation

ABSTRACT

This study addressed research collaboration on a range of instructional and administrative issues concerning how best to serve the educational needs of students with disabilities or at risk in general education classrooms. A group of expert researchers (N=31), funded to conduct research on the General Education Initiative (GEI), was interviewed to examine the research variables they selected and their procedures for implementing them. The selected research variables were arrayed against a framework of variables found to be influential in learning. Issues concerning the procedures that researchers follow to select their methods for operationalizing the variables were considered. Needs for technical assistance in this area were presented. Finally, patterns of collaboration and suggestions to facilitate additional collaboration among researchers were elicited. The study found a lack of research on parental factors related to the GEI and on the issues of common demographic and marker variables or instrumentation. Appended are the interview protocol and a list of influential variables in learning addressed by 28 federally funded projects. (Contains 14 references.) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED 405 693

RESEARCH DESIGN, MEASUREMENT METHODOLOGIES AND PROCEDURES UTILIZED BY OSEP-FUNDED PROJECTS

Sylvia Rosenfield
Stacy Desiderato
Carol Lidz
and
Nancy Zollers

Temple University Center for Research
in Human Development and Education

The research reported herein was supported in part by the Temple University Center for Research in Human Development and Education and in part by a grant from the Office of Special Education Programs of the US Department of Education. The opinions expressed do not necessarily reflect the position of the OSEP and no official endorsement should be inferred.

EC 305403

BEST COPY AVAILABLE

ABSTRACT

Research integration in fields in which research is prolific continues to be a problem. In this study a group of expert researchers funded to conduct research on the GEI were interviewed to examine the variables they selected and their procedures for operationalizing them. The variables were arrayed against a framework of variables found to be influential in learning. Issues concerning the procedures researchers follow to select their methods for operationalizing the variables were considered. Needs for technical assistance in this area are presented. Finally, patterns of collaboration and suggestions to facilitate additional collaboration among researchers were elicited.

OPERATIONALIZING THE MARKER-VARIABLE SYSTEM: RESEARCHERS' SELECTION OF MEASUREMENT TECHNIQUES

Much of the literature in any scientific field is contributed by relatively isolated investigators, and the resulting research often consists of a multitude of uncoordinated studies. Attempts then are made to integrate the field using techniques of synthesis such as literature reviews and meta-analyses. However, the synthesis is impeded by the limited scope of the individual studies and of their samples, and the difficulties in aligning the studies either conceptually or methodologically (Bell & Hertz, 1976). According to Bell and Hertz, the problem of integrating research on a given topic particularly needs to be addressed when there is a "quickening of interest in the field, indicating that a large number of studies will soon be carried out, and yet sufficient work has already been done so as to make it possible to establish . . . empirical anchors" (p. 10).

One useful strategy to facilitate integration in such circumstances is to identify marker variables (Bell & Hertz, 1976). A marker variable is defined as "a background variable (not necessarily the focal variable in the study) that is sufficiently relevant to the measures being used by most studies in a defined research area that it facilitates the general alignment of findings from one study to another" (Bell & Hertz, 1976, pp. 8-9). While more substantive than demographic variables, both types of variables are useful to those who attempt to synthesize findings across multiple studies in a given field.

It is recommended by Bell and Hertz that agencies, such as federal offices that support research, would serve the progress of a field of knowledge if they would both encourage and respond to efforts by investigators to join together in achieving better definition of measures and samples and to facilitate collaboration in planning and execution of studies. They believe that support of efforts for collaboration is especially important when "early efforts have burgeoned into a plethora of uncoordinated constructs, techniques, and measures" (p. 11).

This study addresses research collaboration with particular respect to the literature addressing how best to serve the educational needs of at risk and handicapped students. A series of interviews was conducted with senior researchers who were funded to explore the initiative of the Office of Special Education Programs, U.S. Department of Education, concerning a range of instructional and administrative issues in educating learning disabled and mildly handicapped students in general education classrooms. The variables addressed by the researchers were identified and considered in light of a framework of variables important to the learning process. In addition, operationalization strategies of these expert researchers were elicited, and responses related to stimulating and facilitating collaboration among researchers were obtained.

In the past, there have been some attempts to cope with a field of study in which the literature was growing and synthesis was difficult to build. Within the field of child development, for example, there was an attempt to develop methods of aligning studies in intervention with disadvantaged children in the first three years of life. The problem of specifying sample characteristics in a uniform system for all studies was addressed by a small group of investigators, who began by exchanging reports on research results and then turned to develop a uniform set of sample characteristics. A formal project (Gordon, Beller, Lally, Moreno, Rand, & Freiberg, 1973) was supported by the Office of Child Development to standardize methods of measuring socio-emotional variables for this group. Bell and Hertz (1976), in tracing some of the roots of previous attempts to develop marker variable systems, describe two instances in which a group of investigators came together; that of cognitive research (French, Elstrom, & Price, 1963; French, 1973) and of the psychophysiology of sleep (Rechtschaffen & Kales, 1968).

A further example of coordination across studies, in this case provided by the U.S. Department of Education, is the first-grade reading study project (Bond & Dykstra, 1967). In this case the U.S. Department of Education funded multiple studies of first-grade reading instruction, including several distinct approaches, each of them explicated at various sites across the nation. In addition, the Department funded a special project for coordination of the

studies under the leadership of Professor Bond and Dykstra at the University of Minnesota. Lead researchers of all projects were convened by Bond and Dykstra. Working committees were formed to seek agreement on efforts for coordination, such as tests that would be used in common across projects to measure instructional outcomes. Procedures for general analysis of data (across projects) were also established. For example, a broad study seeking to identify ATI's (Aptitude Test Interactions) was planned and eventually executed. This effort involved a large number of the nation's top researchers in the field of reading instruction and was carried through with good cooperation and notably good results. It involved all of the researchers in planning and carrying out the coordination. It was definitely not a top down operation, except in the sense that the staff of the Federal sponsoring agency was aware of the need and opportunity for coordination and offered support for the meetings and leadership required to carry through the entire effort.

A data base has been established at MIT into which researchers in child language may deposit their own data and withdraw data from other researchers. According to Butler (personal communication):

> A variety of systems for storing the data in accessible forms (thus also requiring that data be provided to that system in specific coding systems) has permitted researchers in child language (who typically deal in very small N's) to draw from much larger pools of similarly gathered data. A massive study of more than 500 subjects is now being entered into the data base, which combines the resources of researchers at the Harvard Graduate School of Education, those at MIT, and other university-based researchers; all at little or no cost to individual researchers. The MIT program is working well . . . the individual researchers may use combined data in a variety of ways, none are coerced to either provide or utilize the data, there are systems which permit multiple uses, and yet the data base is constrained in manageable ways. Such a "marker system," if you will, demonstrates great potential for collaborative research or for individual use of well-gathered data by others.

Directly related to the content area of this research, Keogh and her colleagues (Keogh, Major-Kingsley, Omori-Gordon, & Reid, 1982) reported an attempt in the field of learning disabilities to encourage cooperation and coordination among researchers. In attempting to synthesize the research on learning disabilities, it became clear that one of the major problems was in the way that the research was reported. The lack of reporting on basic demographic variables and other factors made it difficult to align the studies. The UCLA Marker Variable Guide (Keogh, et al, 1982) was developed as a list of variables or markers to describe samples of subjects in learning disabilities research. The indicators were not to be used as an attempt to limit what research is done or reported, but rather to facilitate "commonality of reporting that will allow determination of samples equivalence" (Keogh et al, 1982, p. 81). Although published in 1982, the Guide has seen little implementation.

More recently, on February 26, 1989, the National Joint Committee on Learning Disabilities produced a statement indicating their concern about the lack of consistency in describing subjects in learning disability research, and provided a list of subject descriptors which they recommended for use in learning disabilities research. International efforts have also been directed towards facilitating syntheses across countries. There is increasing movement, in part sponsored by the United Nations, towards utilizing the same instruments or comparable approaches in measuring mathematics and science achievement across nations (H. Walberg, personal communication).

Current efforts to develop alternatives to educate the mildly handicapped are in a state in which collaboration among researchers and the development of a marker variable system could be beneficial. The so-called GEI (General Education Initiative), or shared responsibility position, conforms to Bell and Hertz's indicator for the ideal time for a marker variable system, i.e., where there has been a quickening of interest in the field, a large number of studies either in progress or being planned, and sufficient work having already been done, making it possible to establish the relevant empirical anchors. In recognition of this state of affairs, this project was funded by the Office of Special Education and Rehabilitative Services to conduct such a process: to synthesize the current state of research and practice, and provide a synthesis

of the knowledge base (see Deliverable D, "A Decision-Making Framework for Description of Innovative Education Programs").

Certain assumptions underlie the study, as they relate to methodology. It is assumed that perceived cumulativeness in a research domain is in part a function of certain conventions of evidence and methodology shared by the research community. As Hedges (1987) suggests: "the study of relative cumulativeness across research domains becomes (at least in part) a study of conventions used by the research community for achieving a sense of cumulativeness" (p. 453). As we look for research to inform policy, it is important that inconsistent research results not be primarily due to differences in methodology. While there is no implication here that researchers' independence or freedom to design or operationalize their research should be constrained, the question is being asked if there is some responsibility to look at research procedures to determine where collaboration and agreement might be possible to more readily achieve comparable findings.

Moreover, there is increasing interest in the way that given professionals think about their work. From Schoen's (1983) work on the reflective practitioner to work on teachers' thinking (e.g., Clark & Peterson, 1986), it is a reasonable move to examine the thinking processes of researchers. Examining how expert researchers think about and plan their research might enable us to learn something about this process that would be useful in the teaching of new researchers, as well as in knowing how we might improve the cumulativeness of research in a given field.

A marker variable system (Reynolds, Wang, & Walberg, 1989) has been developed from an extensive and systematic review of the literature. This comprehensive set of variables has been organized into an inclusive conceptual framework of six categories and 228 items. These have been presented to a wide range of stakeholders responsible for research and practice in education. In addition, each item has been rated for the degree of empirical support found for it in the literature (Wang, Haertel, & Walberg, 1989).

The second step in this synthesis is the focus of this study, whose

purpose is to examine which of these variables have been utilized in the burgeoning research on the General Education Initiative, and the instrumentation issues involved in their operationalization. Several related questions were asked:

1. Which variables identified as influential in learning have been included in the OSER-funded research on the GEI?
2. How have the variables been operationalized in terms of measurement procedures and instruments?
3. What factors influenced the selection of measurement procedures?
4. How might collaboration among researchers on variable selection and instrumentation be facilitated?
5. What technical assistance needs are common among researchers in the field regarding instrumentation/operationalization of these influential variables?

Method

Subjects

A list of 34 projects, funded for their first year between 1985 and 1988 by the Office of Special Education and Rehabilitative Services, to develop a knowledge base for the GEI, was obtained from the funding agency. The subjects of this study are the Principal Investigators (PI's), or their designated representative(s), who were the recipients of the grants in these competitions. The subjects for this study represent 29 of the 34 projects. A total of 31 individuals were interviewed; for four of the projects, two individuals were interviewed jointly. Three of the individuals interviewed were each funded for two projects. For a variety of scheduling and other reasons, it was not possible to interview anyone from five of the projects.

Procedures

The design of the study involved interview data, collected by telephone, using a structured interview protocol. A list of names, phone numbers, and

project abstracts for each research grant funded under the GEI was obtained from OSERS. The original intent had been to conduct much of the process through an evaluation of the grant proposals of the funded projects. However, informal contact with several of the PI's indicated that there had been multiple changes from the original submissions. A pilot project was conducted using written materials and phone contact during the summer of 1988, and presented at a meeting in Washington, DC, conducted by the Center for Research in Human Development and Education staff of this project. Based on feedback from those attending this meeting and other members of the project advisory board, the structured interview protocol was developed.

The interview protocol (found in Appendix A) focused on questions related to the major variables and measurement methodologies utilized. The following were identified for each funded research study:

1. Demographic variables about the sample.
2. Independent and dependent variables.
3. Research procedures for collecting data on each variable;.
4. The reason for selection of the measurement procedure or instrumentation.
5. Strengths and limitations of the instruments.

In addition, other questions were asked related to:

6. Interest/experience of the researchers in collaboration with other researchers, as well as ideas about facilitating research collaboration.
7. Interest and need for additional resources/technical assistance with respect to instrumentation to measure the variables.

An introductory letter was sent to each PI, explaining the nature of the project and requesting participation. (A copy of the letter sent during the second phase of interviews is included in Appendix A). The letter was followed by a phone call to the PI's, confirming their interest in participating in the interview process, inviting them to designate themselves or a senior researcher on the project for that purpose, as well as setting a time convenient to interviewers and interviewees. The interviews were designed as structured conversations between researchers, i.e., interviewer and interviewee, and were

conducted in a conversational format between colleagues about research.

Three research associates conducted the interviews. One interview was conducted to pilot the interview protocol, and two additional interviews were conducted jointly by the interviewers to promote standardization of the format. The remaining interviews were conducted individually. The interviewers completed the written protocol, which was then coded for analysis.

Results

Research Variables

The first question addressed which variables identified as influential in learning have been included in the OSER-funded research on the GEI. Each demographic, independent and dependent variable was identified and coded for 28 projects (the results of one project interview were received too late to be included in this analysis) according to the Marker Variable Framework described by Reynolds, Wang, and Walberg (1989). When a variable did not fit the original framework, it was coded as a new item. All variables were coded within the six categories used in the framework, but 23 new items were developed. Appendix B consists of a copy of the complete framework, so that the number of variables not included as well as those found in these studies can be seen. The mean number of variables per study was 11.5; the range varied from 2 to 24. Data from five interviews were coded, separated by two raters to determine reliability. A coder reliability of .88 was obtained.

Demographic Variables

One of the major concerns in development of a marker variable system for research is the presentation of consistent background and demographic data in all studies relevant to the same topic. In the 28 projects analyzed, the mean number of demographic variables was 5.07, with a range of 0 to 14 demographic variables collected by the researchers.

However, the specific demographic data gathered varied widely. The highest consistency is over relatively few categories, including: type of district, i.e., suburban/rural/urban; type of school, i.e., public/private; special education classification; grade level; socio-economic status; gender; and ethnicity. Only three (gender, classification, and grade level) were found in half or more of the studies. The demographic information generally was collected from school records, and some researchers expressed some concern about accuracy of data.

In all but one study the school system's special education classification of the student was accepted, and it was unclear if the basis for the classification would be presented to readers of the research. Given the documented variability of classification systems across schools, there is cause for concern when we come to ask what type of population a program has been demonstrated to serve.

Variables by Category

A second question involves which of the variables in the Marker Variable System have been pinpointed for study by these funded grants. The frequeny count for variables will be presented in terms of the 6 categories and 30 subcategories, rather than the 228 specific items (although these data are available in Appendix B). None of the studies included variables from category 1, State and District Variables; 15 of 28 included variables in category 2, Out of School Contextual Variables. Of these, 12 studies only included Community Variables (consisting almost entirely of the Suburban, Rural, Urban item), although three had variables in the Home Environment and Parental Support Subcategory. In addition, the research studies examined variables in the other categories as follows: 22 of 28 studies for category 3, School Level Variables; 27 of 28 for category 4, Student Variables; 6 of 28 for category 5, Program Design Variables; and 17 of 28 for category 6, Implementation, Classroom Instruction, and Climate Variables. Currently, school and student variables are the major focus of the research, which is appropriate given the nature of the GEI initiative under which these grants were funded.

Instrumentation

Specific to this study are the questions relating to measurement and instrumentation. The data were arrayed to determine if the same variable is being assessed in different ways by the different researchers. Table 1 shows that 72 variables were assessed by researcher-created instruments, in comparison to 48 variables assessed through published instruments. Tables 2 and 3 indicate the number of different achievement and observation measures in use in these studies. Table 4 shows the number of times individual instruments were used across studies. Academic achievement demonstrates this variety. Reading achievement, a common variable in the studies, was measured by group achievement tests, including: CTBS, Stanford Achievement, Metropolitan, Iowa Test of Basic Skills, and the California Achievement Test. Individual tests were also used, including the WRAT and the Woodcock-Johnson, as well as curriculum-based assessment and curriculum-based measurement techniques. In addition, some studies used grades or teacher rankings.

A perceived need to examine the data more qualitatively was clear among these researchers, many of whom collected some qualitative data. Given the recent interest in qualitative data (see also the interest in qualitative data as a topic for technical assistance conferences, listed in Table 6), it is hard to know if the use of this method reflects the current research "Zeitgeist", the problems of this area of research or some combination of the two. It should be noted that most of the research studies used multiple data collection sources for the different variables. Classroom observation, interview data, questionnaires, standardized and curriculum based assessment/measurement techniques were often found in the same study.

The reasons for selecting the instrumentation methodology were also obtained. Table 5 rank orders the reasons for the selection of methodology for 18 PI's selection of 125 measurement strategies. Some researchers reported

one reason for a selection, while giving multiple reasons for others. The two most frequent reasons, ease of use and the need to create the technique for the study because nothing else was available suggest both the autonomy of the researchers and the difficulty of doing research in the schools.

Technical Assistance

The PI's were asked to suggest the kinds of technical assistance they would have found helpful. Table 6 displays the results of that question. The need for technical assistance around qualitative methodology was apparent. In addition, there was an interest in simply having the opportunity to share ideas and problems, as well as techniques.

Collaboration

Finally, questions were raised about the level of collaboration among researchers. Table 7 demonstrates that considerable collaboration is already ongoing among these researchers. While joint data collection and instrument sharing is less common, as a group they were interested in more opportunities to share and provided numerous suggestions to facilitate that process. Table 8 documents these suggestions. Several of the suggestions could be implemented by the funding agencies when research grants on a common problem are to be funded. Table 9 includes some additional issues and concerns raised by the researchers.

Discussion

The results of these interviews with this expert group of researchers raise a number of implications and policy considerations. Using the Marker Variable System as a framework, it is possible to evaluate which variables related to learning have received more versus less attention for a given population or problem. It would appear, for example, that little work has been done so far around parental factors related to the GEI. Secondly, the issue of common demographic and marker variables has not yet been addressed in the special education research literature, in spite of the apparent need for

such consensus and the pioneering work done by Keogh early in the 1980's. Reaching consensus on some common variables across studies, as well as clarifying how to define special education and at risk populations across studies, rather than relying on definition by individual idiosyncratic school classification systems, is likely to benefit the development of research integration and has been attempted in other research areas.

Issues of instrumentation also need further consideration. Studies of the comparability of techniques presuming to measure the same variable would resolve some of the problem. Perhaps some conventions among researchers regarding the nature of and conditions in which variables such as time-on-task are measured would improve the literature considerably. Are there some variables that need to be "standardized" in terms of common meanings and comparable measurement procedures? Because of the energy and commitment of several individuals, some movement toward joint instrument use and shared data collection has begun among this group of funded projects. Two of the interviewees also mentioned consortia around research outside this particular group of projects. Collaboration within schools has become an emerging theme of the school reform movement, and perhaps the interest displayed by the researchers in further collaboration is a reflection of the times as well as their recogni[illegible]n of the benefits to be obtained. It might also be useful to explore how other such groups of researchers managed to reach consensus regarding meaning and measurement operations.

Many of the reasons given for the selection of the type of instrumentation reflected the "5 minutes, 5 cents rule": the measurement needs to be easy to administer, economical, and brief. This is a realistic concern. The researchers were all working in the real world (how researchers enter schools and districts is another issue worth investigating) and were working with school personnel whose main focus was not research. Although these concerns are realistic, they do not invalidate the need to monitor that the purpose or goal of the research does not become subordinate to feasibility issues. This is a difficult line, requiring considerable researcher skill. The need to develop school/research collaboration is clearly illuminated by these researchers' difficulties in gaining cooperation. Strategies such as small gifts,

using instrumentation that would provide useful feedback to the school personnel, and ease and speed of administration were strategies described by the researchers. Most of these researchers acknowledged how difficult it was to try to do good research within the confines of their funding and the problems in gaining cooperation from the schools. Collecting data for applied research in field situations is a difficult process, in which measurement issues sometimes rank second to the realities of the school culture and need to be carefully balanced by experienced researchers. Perhaps we need to consider how to make the schools more of a joint collaborator in the research process. Porter (1987) describes a pioneering collaboration effort between university researchers and teachers, which suggests integrating practitioners more directly and at an earlier point into research projects.

The researchers also made a number of suggestions to funding agencies to encourage a culture of support among researchers. Several suggested providing opportunities to collaborate early in the projects, through meeting and through sharing information and instruments. They recommended using major conferences as opportunities for additional meetings. They asked for incentives to collaborate, rather than compete. Given the competition inherent in the grant process, these researchers recognized the need to build a climate of trust. The development of research networks was seen as a possible facilitating strategy by one individual. This role of strengthening collaboration and building integration may be a function that is not usually included in describing the mission of funding agencies (see, for example, Friedman & Baldin, 1990), but its incorporation might result in important gains across a field.

The research reported here has a number of methodological limitations. The interview process was often lengthy and time consuming for the interviewee. This was particularly true when the researchers, in several cases, had several extensive projects on which to report. One researcher indicated in a later contact that he had only reported the major variables, in spite of the request to identify all the variables, and that there were additional demographic variables that he had not discussed over the phone. An additional step in the procedure would require that the researchers each receive a table

of all their responses, so that the data could be verified by them. It was determined that this would impose too great a burden on the researchers, who had been willing to donate their time for the phone interviews. The data must be interpreted in light of these limitations.

Conclusions

The results of this study suggest some future directions for the research community in special education and the institutional structures which support research. The researchers provided a number of specific suggestions for funding agencies and organizations to foster collaboration and improve the comparability of the research literature. While clearly some of these suggestions are already being implemented, additional support is worth consideration if there is to be a more integrated and meaningful research literature in special education. Individual autonomy and creativity should continue to be highly valued by the education community. Finding ways to work together to share information and instrumentation could, however, also become a valued priority.

REFERENCES

Bell, R., & Hertz, T. (1976). Toward more comparability and generalizability of developmental research. Child Development, 47, 6-13.

Clark, C.M., & Peterson, P.L. (1986). Teacher's thought process. In M.C. Wittrock (Ed). Handbook of Research Teaching, (3rd Ed.) (pp. 255-296). NY: MacMillan.

French, J. (1973). Toward the establishment of non-cognitive factors through literature search and interpretation (Technical Report No. 1). Educational Testing Service, Contract N00014-71-C-0117, Office of Naval Research.

French, J., Ekstrom, R., & Price, L. (1963). Manual for kit of reference tests for cognitive factors. Princeton, NJ: Educational Testing Service.

Friedman, S.L., & Baldwin, W. (1990). Scientist-administrators at the National Institute of Child Health and Human Development as contributors to the scientific enterprise. American Psychologist 45 (1), 54-57.

Gordon, I., Beller, E., Lally, J., Moreno, P., Rand, C., & Freiberg, K. (1973) Studies in social and emotional development in infancy: A collaborative study. (Report No. CB-268). Office of Child Development.

Hedges, L.V. (1987). How hard is hard science, how soft is soft science? The Empirical Cumulativeness of Research. American Psychologist, 42 (5), 443-455.

Keogh, B., Major-Kingsley, S., Omori-Gordon, H., & Reid, P. (1982). A system of marker variables for the field of learning disabilities. Syracuse, NY: Syracuse University Press.

National Joint Committee on Learning Disabilities (1989, February). The need for subject descriptors in learning disabilities research, draft IV. Unpublished paper.

Porter, A. C. (1987, October). Teacher collaboration: New partnerships to attack old problems. Phi Delta Kappa, 147-152.

Reynolds, M.C., Wang, M.C., & Walberg, H.J. (1989). The knowledge bases for special and regular education. Unpublished paper.

Rechtschaffen, A., & Kales, A, (Eds.). (1968). A manual of standardized terminology, techniques, and scoring system for sleep stages of human subjects. Los Angeles: Brain information Service/Brain Research Institute, University of California.

Schon, D.A. (1983). The reflective practitioner. NY: Basic Books.

Wang, M.C., Haertel, G.D., & Walberg, H.J. (1989). What influences learning? A content analysis of review literature. Unpublished paper.

BEST COPY AVAILABLE

Table 1

Instrumentation (N=20 Projects)

File data: 73 variables

Instrumentation created for the study: 72 variables

Published instruments: 48 variables

Table 2

Achievement Measures (N=20 Projects)

Standardized Group Achievement Tests	
CBTS	2
SAT	2
MAT	4
ITBS	1
CAT	3
State Level Tests	1
Local Choice	1
Individual Achievement Tests	
Bass	2
CBM	4
CBA	1
WRAT (Spelling)	1
Richardson Decoding Skill Tests	1
Woodcocks-Johnson	1
Other (e.g., grades, teacher ranking, criterion-referenced):	9

Table 3

Classroom Observation Measures (N=20 Projects)

CISSAR	4
MELD	1
Modified MELD	1
SOBER	1
TIES	1

Table 4

Multiple Use of Published Instruments (N=20 Projects)

Number of Instruments used in four studies: 3

CISSAR

MAT

CBM

Number of instruments used in three studies: 2

Harter Self-Perception Scale for Children

CAT

Number of instruments used in two studies: 6

Number of instruments used in one study: 23

Table 5

Ranking of Reason for Selection of Research Instruments

Created for study

Easy to use

Validity and reliability

Used previously by researcher
Requires little time
Theoretical relationship to construct

Instrument used in district

Sensitive to small changes

Need for qualitative data to compare with previous data
as part of common data set with another research project

Only instrument available for this variable
Face validity for teachers

Provides both research data and information for teachers
Teacher administered
Selected in collaboration with school personnel
Required in RFP
Curious about measure

(N=18 project directors for 125 measures)

Table 6

Types of Technical Assistance Requested by Project Directors

Conferences on specific topics:	
Ethnographic/qualitative research	9
implementation	4
Training in utilizing specific instrument/measurement techniques:	
Classroom observation systems	4
Academic achievment measures	3
Consultation	3
Research design and analysis	3
Sustaining innovations	2
Adapting instruments to answer specific research questions	1
Methods for measuring growth and change in handicapped children	1
Discussion about appropriate outcome measures	1
Procedural issues in collecting data in schools	1
Sharing opportunities among researchers:	
To avoid re-inventing the wheel	3
To provide opportunity to discuss problems/issues	2
Field needs more instrumentation for school-based research	1
Need for more technical assistance in general	1
A lab where standardized training on research instruments is available	1
Provision of "blinded" test administration, available on contact	1

Table 7

Forms of Researcher Collaboration

Discussion with othe researchers	20
Discussion with other researchers specifically about instrumentation	9
Collaboration among researchers:	
Sharing instruments	10
Common data collection	8
Joint authorship and presentations	1
Collaboration between researchers and school personnel	1
Leadership in building researcher network	1

Table 8

Researchers' Suggestions to Facilitate Collaboration

Suggestions to Funding Agencies:	
1. Provide opportunities for collaboration early in projects	5
2. Build consortia around common problems, with funding for collaboration	4
3. Share written information and instruments of similar projects	2
4. Provide incentives and contingencies for collaboration	1
Other Suggestions:	
5. Convene conferences on topics of interest	3
6. Utilize major conferences (such as CEC, AERA) for opportunities to meet	1
7. Develop climate of trust, including trusted leadership	4
8. Joint authorships, with senior authorship rotated	1
9. Consider time pressures on researchers	1

Table 9

Additional Issues/Concerns Raised by Researchers

1. Collaboration should not be forced (2)

2. There is a need for more theoretical discussions in the field (1)

3. There needs to be more tolerance for divergent approaches (such as quantitative research) by funding agencies (2)

4. There needs to be recognition of how "needy" schools are; asking schools to be collaborative in research, given their own needs, is inappropriate. Funds should be built in to reward schools for participation in research (1)

APPENDIX A
LETTER TO PROJECT DIRECTORS AND INTERVIEW PROTOCOL

APPENDIX A

October 31, 1989

^F1^

Re: ^F2^

Dear ^F3^,

This is a follow-up to a letter that we sent to you last year regarding the above-named project, which is funded by the Office of Special Education Programs (OSERS) to examine a range of instructional and administrative issues in educating learning disabled and mildly handicapped students in general education classrooms. We were not able to schedule an interview with you at that time, but would now like to arrange a time to speak with you about this project.

As we indicated in the previous letter, the Temple University Center for Research in Human Development and Education was funded to synthesize the state of the field and the literature on important variables that influence student learning. To this end, we are gathering information on research methodology and research development across projects relating to these variables. We are now in the final phases of data collection for this project, and wish to arrange for your participation.

During the next month, Carol Lidz and I will conduct telephone interviews with the researchers from the OSERS-funded projects who have not yet been contacted to learn about the research questions and methodologies, data collection plans, and activities across the states. These interviews take approximately one hour. At the conclusion of this process, all project researchers who express an interest will receive a brief report of our findings.

There are several appointment times, mostly on Monday and Wednesday mornings, that are available throughout November. Veronica Norris from our office will be calling you in the next few days to schedule a time that is mutually convenient. If any of the prescheduled times is not convenient, please indicate to her the best times to reach you.

We are aware that your projects are in various stages of implementation, and that some of you will answering interview questions either prospectively or retrospectively. Either point of view is fine. In brief, we will be asking you about the following:

-on what variables have you, or are you planning on, collecting your data?

BEST COPY AVAILABLE

-what instruments are you or are you planning on using?

-why did you choose these particular instruments?

-have there been any barriers to data collection, or do you anticipate any?

In addition to these questions, we can include any issues concerning instrumentation that you may wish to discuss.

Thank you for your interest and willingness to participate, we look forward to spending time on the telephone with you during the next month.

Sincerely,

Sylvia Rosenfield
Senior Research Associate
Professor of School Psychology

SR/ab

Synthesis Interview Protocol :
Research Instrumentation

Name of Interviewer:_____

Date of Interview: _____

Introduction: We appreciate you giving us this time. The synthesis project is looking at the methodologies used by some of the major researchers in terms of instrumentation. We hope to make this as brief and as interesting as possible. We will be taping and taking notes.

1. Project Name:

2. Project Director:

3. Project Personnel Interviewed (Name and Title):

4. Date of Interview:

5. Phone Number:

6. Address:

7. Dates of Project:

8. Geographic Location:

For Each Variable, collect information on items 9-16. Refer to Logistics in Practice form..

17. What kind(s) of technical assistance with respect to instrumentation would you find helpful?

Are you interested in conferences:
On particular topics:
consultation/implementation
ethnographic/qualitative data?
Other (specify):

Who would you like to have attend/present?

Other:

18. What kinds of collaboration with other researchers are you engaged in related to this project.

Sharing instruments _____

Discussion about:

Literature _____

Findings _____

Instruments _____

Data Analysis _____

Common Data Collection _____

Joint Presentation of Findings _____

Other (Specify):

19. What do you believe would lead to increased collaboration on the use of similar instrumentation and/or common data collection among researchers in this field?

20. Additional Comments:

Project Name:

Instrumentation Survey

Logistics in Practice

9. Code _____

10. Type of Variable (circle one): DV IV DGV II

Variable	13. Measure	14. Reason for Selection	15. Strengths	16. Limitations
11. Variable Label	___ Direct observation ___ Permanent product ___ Questionnaire ___ Rating scale ___ Standard test ___ Criterion reference measure ___ Classroom observation scale ___ Anecdotal recording ___ Interview	___ Convenience ___ Accessibility ___ Instrument constructed for service ___ Clinical utility ___ Theoretical construct favored ___ Psychometric properties ___ critical variable ___ acceptable ___ not an issue ___ Established measure in literature ___ Previous knowledge of experimenter		
12. Instrument(s)				

BEST COPY AVAILABLE

APPENDIX B
INFLUENTIAL VARIABLES IN LEARNING INCLUDED IN TWENTY-EIGHT FEDERALLY FUNDED RESEARCH PROJECTS ON THE GEI

I: State and District Variables

	Number of Studies
District Level Demographics and Marker Variables	
School district size	____
Degree of school district bureaucratization	____
Degree of school district centralization	____
Presence of contractual limits on after school meetings	____
Presence of contractual limits on class size	____
Presence of contractual restrictions on activities performed by aides	____
Degree of central office assistance and support for programs	____
Degree of board of education support for instructional programs	____
Per pupil expenditure	____
Efficiency of transportation system	____
State Level Policy Variables	
Teacher licensure requirements	____
Degree of state control over textbooks	____
Degree of state control over curriculum	____
Academic course and unit requirements	____
Minimum competency testing requirements	____
Adherence to least restrictive environment/mainstreaming	____

BEST COPY AVAILABLE

II: Out of School Contextual Variables

Community Variables

Socioeconomic level of community	2
Ethnic mix of community	____
Quality of social services for students	____
Rural/Urban/Suburban	11

Peer Group Variables

Level of peers' academic aspirations	____
Level of peers' occupational aspirations	____
Presence of well defined clique structure	____
Degree of peers' substance abuse	____
Degree of peers' criminal activity	____

Home Environment and Parental Support Variables

Educational environment (e.g. number of books and magazines in home)	____
Parental involvement in assuring completion of homework	____
Parental involvement in assuring regular school attendance	____
Parental monitoring of student television viewing	1
Parental participation in school conferences and related activities	1
Parental application of appropriate, consistent discipline	____
Parental expressions of affection to children	____
Parental interest in student's school work	1
Parental expectation for academic success	____
Parental Involvement	2
Parental Satisfaction with School Program	2
Family Constellation	1

Student Use of Out of School Time Variables

Student participation in clubs and extracurricular school activities	____
Amount of time spent on homework	____
Amount of time spent on leisure reading	____
Amount of time spent viewing educational television	____
Amount of time spent viewing noneducational television	____

III: School Level Variables

Demographic and Marker Variables

Public versus private school	11
Size of school	4
Level of Chapter I (compensatory education) funding	____
Level of Title VII (bilingual) funding	____
Level of PL 94-142 (handicapped) funding	____
Mix of socioeconomic levels in the school	3
Mix of cultural/ethnic groups in the school	3
Mix of student language backgrounds in the school	____
Teacher age	1
Teacher degree	2
Teacher experience	2
Teacher competence	1

Teacher/Administrator Decision Making Variables

Teacher and administrator consensus on school values, norms, and roles	____
Principal actively concerned with instructional program	2
Teacher involvement in curricular decision making	____
Teacher involvement in instructional decision making	2
Teacher involvement in resource allocation decisions	____
Teacher involvement in finding ways to increase academic performance	4
Teacher confidence in handling problems	3

BEST COPY AVAILABLE

School Culture Variables (Ethos Conducive to Teaching and Learning)

Use of cooperative, not exclusively competitive, goal structures	___
School-wide emphasis on and recognition of academic achievement	___
Low staff absenteeism	___
Low staff turnover	___
Low staff alienation	___
Active collaboration between regular classroom teachers and special education teachers	3
Safe, orderly school climate	___
Degree of school personnel professional collaboration	5
Rate of referrals to special ed	3
Staff satisfaction	5
Concerns regarding change	1
Teacher expectations/tolerance for student behavior	2

School-Wide Policy and Organizational Variables 1

Presence of "effective schools program"	3
Explicit school grading and academic progress policies	___
Explicit school-wide discipline policy	___
Explicit school-wide attendance policy	___
Coordination of pullout programs for handicapped students with regular instructional programs	1
Use of multi-age grouping	___
Use of instructional teaming	2
Use of cross-age tutoring	___
Use of peer tutoring	2
Use of academic tracking for specific school subject areas	___
Minimization of external classroom disruptions (e.g., broadcast announcements)	___
Adherence to least restrictive environment/mainstreaming	1
Minimum use of suspension and expulsion as discipline tools	___

BEST COPY AVAILABLE

Accessibility Variables

Accessibility of educational program (overcoming architectural, communication, and environmental barriers) ____

Parental Involvement Policy Variables

Parental involvement in improvement and operation of instructional programs ____

School-sponsored parenting skills workshops (e.g., behavior modification, Parent Effectiveness Training) ____

IV. Student Variables

Demographic and Marker Variables

Chronological age 6

Socioeconomic status 12

Gender 14

Ethnicity 10

First or native language 5

Physical and health status ____

Special education classifications (e.g., EMR, LD) 16

Grade level 15

At risk 1

Birthorder 1

History of Educational Placements

Prior grade retentions 4

Prior special placements 6

Current placement in regular class versus self-contained special education class 3

Age/Grade match 1

Social and Behavioral Variables 3

Positive, nondisruptive behavior 6

Appropriate activity level 1

Cooperativeness with teacher 3

Cooperativeness with peers 4

Ability to make friends with peers 2

Motivational and Affective Variables	3
Attitude toward school	
Attitude toward teachers	
Attitude toward subject matter instructed	
Motivation for continual learning	1
Independence as a learner	
Perseverance on learning tasks	
Self-confidence	
Academic self-competence concept in subject area instructed	1
Attributions for success and failure in subject area instructed	
Self-concept	4
Cognitive Variables	1
Piagetian stage of cognitive development	
Level of reasoning (fluid) ability	
Level of spatial ability	
Memory	
Level of general academic (crystallized) knowledge	5
Level of specific academic knowledge in subject area instructed	13
Level of reading comprehension ability	6
Level of writing ability	
Level of computational ability	3
Level of oral fluency	3
Level of listening skills	1
Learning styles (e.g., field independent, visual/auditory learners, high cognitive complexity)	
Level of spelling	2
IQ	6
Learning potential	1
Language level	1

Metacognitive Variables

Self-regulatory, self-control strategies (e.g., control of attention) 1

Comprehension monitoring (planning; monitoring effectiveness of attempted actions; monitoring outcomes of actions; testing, revising, and evaluating learning strategies) ____

Positive strategies for coping with failure ____

Positive strategies to facilitate generalization of concepts ____

Psychomotor Variables

Psychomotor skills specific to area instructed ____

V: Program Design Variables

Demographic and Marker Variables

Size of instructional group (whole class, small group, one-on-one instruction) 1

Proportion of students with special needs served in regular classes 1

Number of classroom aides required ____

Resources needed ____

Curriculum and Instructional Variables

Clearly presented academic, social, and attitudinal program goals/outcomes ____

Use of explicit goal/objective setting for instruction of individual student (e.g., Individualized Educational Plans [IEPs]) 2

Use of mastery learning techniques, including use of instructional cues, engagement, and corrective feedback ____

Use of cooperative learning strategies ____

Use of personalized instructional program ____

Use of prescriptive instruction combined with aspects of informal or open education ____

Use of diagnostic-prescriptive methods ____

BEST COPY AVAILABLE

Curriculum and Instructional Variables (continued)

Use of computer-assisted instruction	____
Use of crisis management techniques to control classroom disruptiveness	____
Use of program strategies for favorable affective climate	____
Alignment among goals, contents, instruction, assignments and evaluation	____
Curriculum units integrated around key discipline-based concepts	____
Use of multidisciplinary approaches to instructional planning (including diagnosis in educational planning)	____
Presence of information in the curriculum on individual differences and commonalities (including handicapping conditions)	____
Presence of culturally diverse materials in the curriculum	____
Curriculum Design Variables	2
Materials employ alternative modes of representation	1
Material is presented in a cognitively efficient manner	1
Materials employ explicit and specific objectives	____
Materials employ advance organizers	1
Materials employ learning heirarchies	____
Materials are tied to assessment and diagnostic tests	1
Availability of materials and activities prepared specifically for use with whole classroom, small groups, or one-on-one instruction	1
Degree of structure in curriculum accommodates needs of different learners	1
Student interests guide selection of a significant portion of content	____
Availability of materials and activities for students with different abilities	____

Curriculum Design Variables (continued)

Availability of materials and activities for students with different learning styles ____

Developmental issues considered ____

Student experiences considered ____

VI: Implementation, Classroom Instruction, and Climate Variables

Classroom Implementation Support Variables

Creation and maintenance of necessary instructional materials ____

Adequacy in the configuration of classroom space ____

Availability of classroom aides ____

Use of written records to monitor student progress ____

Establishing efficient classroom routines and communicating rules and procedures 1

Developing student self-responsibility for independent study and planning of one's own learning activities ____

Classroom Instructional Variables 3

Prescribing individualized instruction based on perceived match of type of learning tasks to student characteristics (e.g., ability, learning style) 1

Use of procedures requiring rehearsal and elaboration of new concepts ____

Use of clear and organized direct instruction ____

Systematic sequencing of instructional events and activities ____

Explicit reliance on individualized educational plans (IEPs) in planning day-to-day instruction for individual students ____

Use of instruction to surface and confront student misconceptions ____

Use of advance organizers, overviews, and reviews of objectives to structure information ____

Clear signalling of transitions as the lesson progresses 1

Classroom Instructional Variables (continued)

Significant redundancy in presentation of content	____
Teacher conveys enthusiasm about the content	____
Directing students' attention to the content	____
Using reinforcement contingencies	1
Setting and maintaining clear expectations of content mastery	1
Providing frequent feedback to students about their performance	1
Explicitly promoting effective metacognitive learning strategies	____
Promoting learning through student collaboration (e.g., peer tutoring, group work)	1
Corrective feedback in event of student error	____
Flexible grouping that enables students to work to improve and change status/groups	____
Teaching for meaningful understanding	____
Degree to which student inquiry is fostered	____
Scaffolding and gradual transfer of responsibility from teacher to student	____
Degree to which assessment is linked with instruction	____
Skills taught within the context of meaningful application	____
Good examples and analogies to concretize the abstract and familiarize the strange	____
Consideration of the teacher's use of language in the instructional process	1
Explicitly promoting student self-monitoring of comprehension	____

Quantity of Instruction Variables	1
Length of school year	____
Length of school day	____
Time on task (amount of time students are actively engaged in learning)	8

Quantity of Instruction Variables (continued)

Time spent in direct instruction on basic skills in reading	____
Time spent in direct instruction on basic skills in mathematics	____
Time allocated to basic skills instruction by regular classroom teacher	____
Time allocated to basic skills instruction by special education teacher	____
Difference between academic learning time and allocated learning time	____
Time spent out of school on homework	____
Time spent out of school viewing educational television	____
Time spent out of school in informal learning experiences (e.g., museum trips, scouts)	____
Nature of regular classroom content missed by students during participation in pullout programs	____
Attendance	1
Tardiness	1

Classroom Assessment Variables

Use of assessments to create detailed learner profiles rather than simple classifications or unelaborated total scores	1
Use of assessment as a frequent, integral component of instruction	1
Accurate, frequent measurement of basic skills in reading	____
Accurate, frequent measurement of basic skills in mathematics	____

Classroom Management Variables

Minimal disruptiveness in classroom (e.g., no excessive noise no students out of place during instructional activities, no destructive activities)	____
Group alerting (teacher uses questioning/recitation strategies that maintain active participation by all students)	____
Learner accountability (teacher maintains student awareness of learning goals and expectations)	____
Transitions (teacher avoids disruptions of learning activities, brings activities to a clear and natural close, and smoothly initiates new activity)	____

Classroom Management Variables (continued)

Teacher "withitness" (teacher is continually aware of events and activities and minimizes disruptiveness by timely and nonconfrontational actions)	____
Student and Teacher Interactions: Social Variables	2
Student initiates positive verbal interactions with other students and with teachers	____
Student responds positively to questions from other students and from teacher	____
Teacher reacts appropriately to correct and incorrect answers	____
Teacher reinforces positive social interactions with students rejected by peers	____
Teacher provides explicit coaching on appropriate social behaviors	____
Teacher provides explicit coaching to reduce aggression	____
Student and Teacher Interactions: Academic Variables	
Teacher asks academic questions frequently	1
Teacher asks questions predominantly low in difficulty	____
Teacher asks questions that are predominantly low in cognitive level	____
Teacher maintains high post-question wait time	____
Frequent calls for extended, substantive oral and written response (not one-word answers)	____
Classroom Climate Variables	
Cohesiveness (members of class are friends sharing common interests and values and emphasizing cooperative goals)	1
Low friction (students and teacher interact in a considerate and cooperative way, with minimal abrasiveness)	____
Low cliqueness (students work with many different classmates, and not just with a few close friends)	1
Satisfaction (students are satisfied with class activities)	1
Speed (the pacing of instruction is appropriate for the majority of the students)	____
Task difficulty (students are continually and appropriately challenged)	____

Classroom Climate Variables (continued)

Low apathy (class members are concerned and interested in what goes on in the class) _____

Low favoritism (all students are treated equally well in the class, and given equal opportunities to participate) _____

Formality (students are asked to follow explicitly stated rules concerning classroom conduct and activities) _____

Goal direction (objectives of learning activities are specific and explicit) _____

Democracy (all students are explicitly involved in making some types of classroom decisions) _____

Organization (class is well organized and well planned) _____

Diversity (the class divides its efforts among several different purposes) _____

Environment (needed or desired books and equipment are readily available to students in the classroom) _____

Competition (students compete to see who can do the best work) _____